

ABSTRACT OF THE DISCLOSURE

A distance of flight (DOF) approach to mass spectroscopy in which the resolution among the various ion masses is accomplished in space rather than time. A separate detector is associated with each ion mass resolution element. The DOF mass spectrometer can serve as one element in a tandem arrangement which has the capability to produce a full two-dimensional precursor/product spectrum for each bunch of ions extracted from the source. A "distance-of-flight" (DOF) mass analyzer is used in combination with time-of-flight (TOF) mass analysis for precursor and product dispersion. All the precursor ions can undergo a mass changing reaction simultaneously, while still retaining the essential information about the particular precursor m/z value from which each product ion m/z value emanated. Through the use of a two-dimensional detector, all the products ions from all the precursors can be detected for each batch of ions analyzed.